

## GaN MMIC Ka-Band Power Amplifier, Phase I

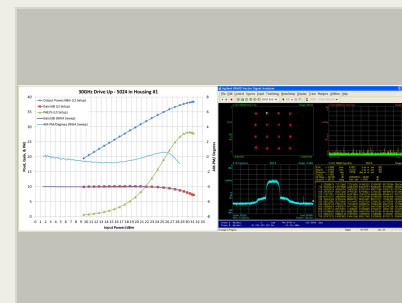
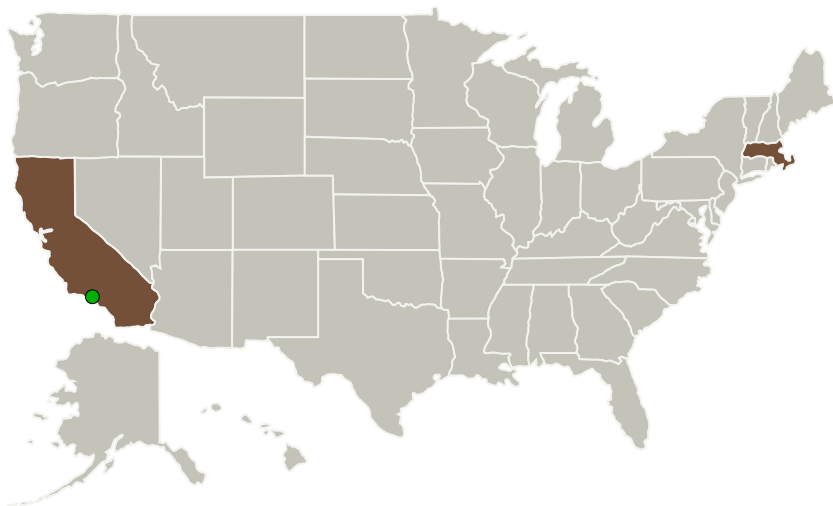
Completed Technology Project (2017 - 2017)



## Project Introduction

NASA is seeking innovative Advanced RF Platform technologies at the physical level, specifically Ka-Band high efficiency high linearity microwave 10 to 20 Watt solid state power amplifiers (SSPAs), to meet the needs of future space missions utilizing complex modulation for communications and sensor applications. Space missions require the smallest size, lowest power, space qualifiable hardware components leading to the choice of monolithic microwave integrated circuit (MMIC) technology. In Phase I of this SBIR, Custom MMIC Design Services, Inc. (CMDS) will analyze the GaN MMIC technologies from the available domestic foundries (NGST, Qorvo, HRL) and select best GaN HEMT foundry and process technology to achieve Ka-Band high efficiency high linearity microwave 10 to 20 Watt SSPA. CMDS, utilizing the appropriate CAD tools, will thoroughly design and develop the required MMIC PA. We will also prepare all necessary design rule check (DRC) and layout versus schematic (LVS) documentation during Phase I to assure clean layouts ready for fabrication submission to facilitate the first pass of GaN MMIC fabrication on the first day of a follow-on Phase II contract. By being completely ready for submission on the first day of phase II, we assure the time necessary for two complete GaAs MMIC LNA iterations during Phase II.

## Primary U.S. Work Locations and Key Partners



GaN MMIC Ka-Band Power Amplifier, Phase I Briefing Chart Image

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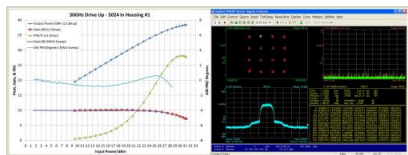
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Organizations Performing Work	Role	Type	Location
Custom MMIC Design Services, Inc.	Lead Organization	Industry	Chelmsford, Massachusetts
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	Massachusetts

## Images



## Briefing Chart Image

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(<https://techport.nasa.gov/image/133127>)

## Organizational Responsibility

## Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

## Lead Organization:

Custom MMIC Design Services, Inc.

## Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

## Program Director:

Jason L Kessler

## Program Manager:

Carlos Torrez

## Principal Investigator:

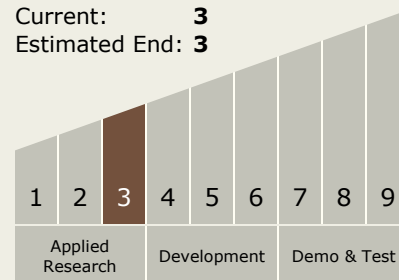
James M Moniz

## Technology Maturity (TRL)

Start: 3

Current: 3

Estimated End: 3



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## Technology Areas

### Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.2 Radio Frequency
    - └ TX05.2.7 Innovative RF Technologies